

CLAIMS

1. A dispensing apparatus intended for dispensing of stacked objects in a predetermined dispensing direction, the dispensing apparatus comprising
 - 5 - at least one guiding means intended for guiding the stack of objects and
 - at least one dispensing unit intended for repetitive dispensing of at least one object at a time and said dispensing unit furthermore comprising
 - mutually integrate first supporting member and second supporting member intended for supporting a first object and a second object, respectively, of the stacked objects,
 - 10 - where the first object is an object being an outermost object and intended for immediate subsequent release in the predetermined dispensing direction,
 - where the second object is an object being an object neighbouring the first object and situated between the first object and the remaining stack of objects,
 - said first supporting member and said second supporting member being spaced apart
 - 15 and exhibiting a mutual displacement in the predetermined dispensing direction,
 - said mutual displacement being sufficient for the second supporting member, during operation of the apparatus, to support the second object, when the first supporting member, during operation of the apparatus, releases the first object.
- 20 2. An apparatus according to claim 1, wherein dispensing of at least one initial first object in the predetermined dispensing direction is achieved by the dispensing unit rotating an angle in an initial rotational direction, said angle being determined by the at least one initial first object being released from the support of the first supporting member and from the stack of objects, while at the same time an initial second object is still supported by
 - 25 the second supporting member.
3. An apparatus according to claim 1 or claim 2, wherein dispensing of at least a subsequent first object in the predetermined dispensing direction is achieved by the dispensing unit rotating an angle in a rotational direction being the opposite than the initial
 - 30 rotational direction, said opposite angle being determined by the at least one subsequent first object being released from the support of the first supporting member and from the stack of objects, while at the same time a subsequent second object is still supported by the second supporting member.
- 35 4. An apparatus according to claim 1 or claim 2, wherein dispensing of at least a subsequent first object in the predetermined dispensing direction is achieved by the dispensing unit rotating an angle in a rotational direction being the same as the initial rotational direction, said angle being determined by the at least one subsequent first object being released from the support of the first supporting member and from the stack

of objects, while at the same time a subsequent second object is still supported by the second supporting member.

- 5 5. An apparatus according to claim 1, wherein dispensing of at least one initial first object in the predetermined dispensing direction is achieved by the dispensing unit displacing linearly in an initial longitudinal direction, said linear displacement being determined by the at least one initial first object being released from the support of the first supporting member and from the stack of objects, while at the same time an initial second object is still supported by the second supporting member.
- 10 6. An apparatus according to claim 1 or claim 5, wherein dispensing of at least a subsequent first object in the predetermined dispensing direction is achieved by the dispensing unit displacing linearly in a longitudinal direction being the opposite than the initial longitudinal direction, said opposite linear displacement being determined by the at least one subsequent first object being released from the support of the first supporting member and from the stack of objects, while at the same time a subsequent second object is still supported by the second supporting member.
- 20 7. An apparatus according to claim 1 or claim 5, wherein dispensing of at least a subsequent first object in the predetermined dispensing direction is achieved by the dispensing unit displacing linearly in a longitudinal direction being the same as the predetermined initial rotational direction, said same direction being determined by the at least one subsequent first object being released from the support of the first supporting member and from the stack of objects, while at the same time a subsequent second object is still supported by the second supporting member.
- 30 8. An apparatus according to any of the preceding claims, wherein the second supporting member is provided with a protrusion extending in the predetermined dispensing direction, said protrusion being intended for forcing a first object in the dispensing direction, when being released from the support of the first supporting member.
- 35 9. An apparatus according to any of the preceding claims, wherein a guiding element is positioned between the first supporting member and the second supporting member, said guiding member intended for guiding the at least first object in a plane perpendicular to the predetermined dispensing direction.
10. An apparatus according to any of the preceding claims, wherein a guiding element is positioned in vicinity of the second supporting member, opposite to the first supporting

member, said guiding member intended for guiding the at least second object in a plane perpendicular to the predetermined dispensing direction.

11. An apparatus according to any of the preceding claims, wherein a guiding element is
5 positioned in vicinity of the second supporting member, opposite to the first supporting member, said guiding member intended for guiding the at least part of the stack of objects in a plane perpendicular to the predetermined dispensing direction.

12. An apparatus according to any of the preceding claims, wherein the apparatus
10 comprises means intended for guiding the stack of objects along an outer circumference of the objects by surrounding the stack of objects by a plurality of guiding elements extending opposite to the predetermined dispensing direction.

13. An apparatus according to any of the preceding claims, wherein the apparatus
15 comprises means intended for guiding the stack of objects along an inner circumference of an inner cavity of the objects by insertion of a guiding element inside an object being positioned in an end of the stack being opposite than the position of the at least first object of the stack.

20 14. Apparatus according to any of claims 1-13, wherein the apparatus comprises means intended for forcing the objects in the predetermined dispensing direction by means of a force element being positioned in an end of the stack being opposite than the position of the at least first object of the stack and substantially acting in the predetermined dispensing direction on an object being opposite to the at least first object.

25 15. Apparatus according to any of claims 1-13, wherein the apparatus comprises means intended for forcing the objects in the predetermined dispensing direction by means of a force element being positioned along at least some of the objects of the stack and substantially acting in the predetermined dispensing direction on at least one of the
30 objects of the stack.

16. Apparatus according to any of claims 9-15, wherein the guiding elements and the force elements are integrate so that guiding and forcing is intended for being performed by the same number of integrate elements along the outer circumference of the objects,
35 alternatively within an inner cavity of the object of the stack being opposite to the at last first object.

17. A method for supporting and dispensing of stacked objects, said method comprising the steps of:

(a) guiding the objects of the stack in a plane perpendicular to a predetermined dispensing direction

5 (b) initially supporting an at least first object by a first supporting member and supporting a second object and the remainder of the stack by a second supporting member,

(c) supporting an initial second object by the second supporting member and thereby supporting the stack by the second supporting member

(d) displacing the first supporting member and the second supporting member, said

10 displacing of the supporting members resulting in

(e) releasing the at least first object from the support by the first supporting member, and thereby dispensing the at least first object from the stack,

(f) releasing the stack of objects from the support by the second supporting member, thereby displacing the stack of objects in the dispensing direction, resulting in

15 (g) supporting the initial second object by the first supporting member and thereby supporting the stack of objects by the first supporting member,

(h) repeating steps (c) through (g) for dispensing additional objects from the stack of objects.

20 18. A method according to claim 17, the method including the additional step of forcing the at least first object in the dispensing direction by inserting a protrusion in a spacing between the at least first object and the second object and displacing the protrusion in the dispensing direction.

25 19. A method according to claim 17 or 18, including the additional step of dispensing of the at least first object in timed relation to subsequent equipment, such as a conveyor belt, for handling the at least first object.

20. A system for handling objects and comprising an apparatus according to any of claims
30 1-10.

21. A system according to claim 20, wherein a second number of dispensing units are placed in a position before, seen in the dispensing direction, a first number of dispensing units, wherein the second number of dispensing units is intended for dispensing a

35 predetermined number of objects from a second stack of objects to a first stack of objects, where said first stack of objects constitute the stack of objects primarily intended for being dispensed, and where said second stack of objects constitute a secondary stack of objects acting as a buffer for the first stack of objects.

22. A system according to claim 20 or 21, wherein this second number of dispensing units operates in a slower cycle than the first number of dispensing units, and where the second number of dispensing units is intended for releasing more first objects at a time than the number of first objects intended for being released by the first number of dispensing units.

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23. A system according to any of the preceding claims, wherein a circumference of the second supporting member has a material extent gradually increasing seen in a direction perpendicular with a tangent of the circumference of the supporting member

10 24. A system according to claim 23, wherein the circumference of the supporting member exhibits a sharpened edge along a circumference of the supporting member.